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EL&P

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HURRICANE

Cleanup will continue for months after Hurricane Bob caused an estimated 2.1-million power outages, from the Carolinas to Maine, Aug. 18-20. With 138-mph gusts, damage centered on east Long Island and New England. Advanced preparations reduced deaths, injuries and damages. (See p.4, and *EL&P*, 10/91.)
Texas Utilities plans a $1-billion, third-quarter charge against earnings after regulators disallowed some Comanche Peak plant costs. **Nine Mile Point 2** lost power to several control room systems and shut down Aug. 13 after a power surge from a transformer malfunction. (See *EL&P*, 10/91).

Special section on the IEEE/PES T&D Conference and Exposition starts on page 46

NU seeks T-access changes

FERC sets conditions for PSNH acquisition

HARTFORD, CT—Northeast Utilities said it plans to ask federal regulators to change transmission-access conditions for acquisition of Public Service Co. of New Hampshire.

NU won't go so far as to say the $2.3-billion deal to acquire Public Service Co. of New Hampshire hinges on changes to the Federal Energy Regulatory Commission conditions. But state regulators said their final approval might rely on FERC changes to the conditions.

FERC said NU could not give higher priority to its own non-firm use, including "economy trades," than to third-party requests for firm wheeling in allocating existing transmission capacity.

PSNH emerged from bankruptcy with the understanding NU would acquire it (*EL&P*, 7/91 p.1).

NU and state regulators in New Hampshire said the conditions, as worded, could hurt the state's ratepayers. NU said the FERC decision wouldn't allow NU to bump others with firm contracts off the merged transmission system, should NU find more economical short-term power and need wheeling capacity to buy it. State regulators in Connecticut have scheduled hearings: New Hampshire regulators said they would reject the deal if conditions are unfair to ratepayers.

"The conditions single us out for different treatment apart from the rest of New England," noted NU's Jeffrey R. Kotkin. In addition, FERC said if new capacity couldn't be built to meet addition needs, NU would have to go to FERC and be told how to divide existing capacity, according to Kotkin.

Kotkin said such conditions probably wouldn't occur for 10-15 years.

New Hampshire Public Service Commission agreed with most of what FERC said, but had a "major concern" with the apparent loss of native-load priority for New Hampshire and Connecticut, said a NHPUC spokesperson.

"It seems FERC has relegated us to second-class jurisdiction where we don't have the same rights and benefits of the rest of region," said Wynn Arnold, executive director for NHPUC. "We feel our case is compelling," Arnold added.

NU has 60 days from Aug. 9 to accept or reject FERC's merger conditions, and 30 days from Aug. 9 to file for rehearing, said a FERC spokesperson.

NU had proposed broader transmission access than now exists, including

Continued on page 13

EL&P to launch new publication for power delivery marketplace

BARRINGTON, IL—*Power Delivery Product News*, a sister publication to *Electric Light & Power*, will premier in January. To be published quarterly, the new PennWell Publishing Co. product tabloid magazine is designed to meet the needs of the total power delivery market for information about equipment, apparatus and services.

The new publication will serve a reader audience of 70,000, drawn from the electric utility industry, architect/engineers and system constructors, plus distributors, wholesalers and electrical contractors who work with and for electric utility organizations.

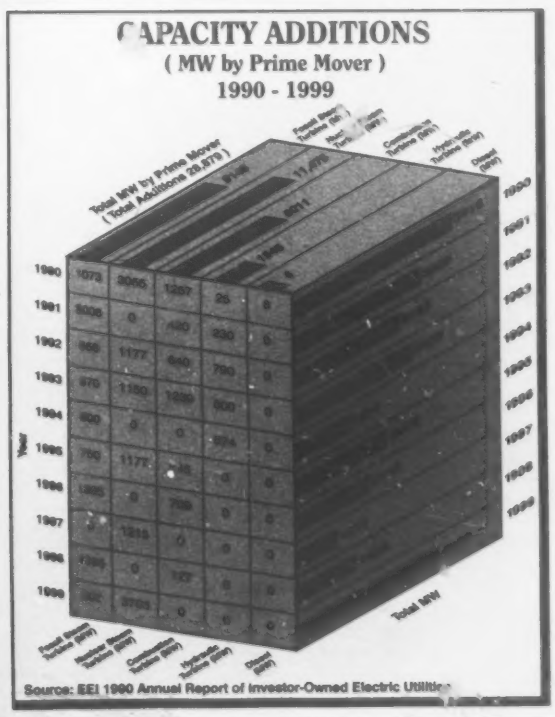
"The growing need for more and better product information is indicated by the steadily increasing number of reader service inquiries we receive each month," says Arthur L. Rice, *EL&P* publisher, who also will be publisher of *PDPN*.

"Since the largest portion of these inquiries come from readers in the power delivery business, we believe *PDPN* provides a unique opportunity to tailor our publication to meet these readers' special interests," Rice added.

Editorial direction for *PDPN* will be provided by *EL&P* Editor-in-Chief Robert Lincicome.

Lincicome pointed out that *PDPN* is a

Continued on page 1


CAPACITY ADDITIONS
(MW by Prime Mover)
1990 - 1999
Total MW by Prime Mover
(Total Additions 28,879)
Year
Total MW
Source: EEI 1990 Annual Report of Investor-Owned Electric Utilities

DSM grows into $1.5-B/year business this year

Mark T. Hoske
News Editor

BOSTON—Traditional utility thinkers say demand-side management intuitively doesn't make sense. Why would anyone seek to reduce sales?

Answers from utilities, depending on who you ask, range from "it's good business," to "regulators require it."

The spectrum's still wide on how much DSM actually will cut into future load requirements, and at what cost. Recent figures from the Electric Power Research Institute say DSM could account for 30 percent of new capacity needs from 1990-2010. All but the most radical agree it's no substitute for all the projected new supply.

Even so, today's DSM has grown to a $1.5-billion per year industry, by EPRI's measure, with growth solid enough to turn supply-oriented heads.

At "The 5th National Demand-Side Management Conference," here in Boston, various speakers said DSM allows utilities to:

- Reduce peak demands and help fill valleys with installations of energy-efficient electric technologies.
- Better manage power delivery reliability and delay investments there.
- Improve customer service, value, and marketing.
- Realize gains, through regulatory in-

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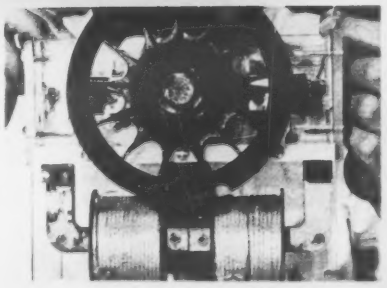

Free water heater wrapping—among the first conservation programs—is still widely promoted. Massachusetts Electric is part of NEES. While insulation is low-technology efficiency, the photo, right, shows high-technology—a superconducting motor. Liquid nitrogen surrounds the coils when operating. Cost-effective superconductivity could slash electricity demand.

Special DSM report: p.18

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News Briefs

JILL MINNER, Special Projects Editor

Acquisition joins Multi-Amp, Biddle, Megger

TBG Industries, a privately held international corporation and parent company of Multi-Amp Corp., announced that it has acquired Biddle Instruments and Megger Instruments Ltd, as part of a plan to form a new holding company. AVO International Inc. will encompass Multi-Amp, Biddle and Megger, according to Ruben E. Esquivel, who will serve as president and chief executive officer of the new holding company.

"The combination of Multi-Amp, Biddle and Megger establishes a strong foundation of core companies on which AVO International will continue to build and expand in the electrical test and measurement industry," Esquivel said.

AVO International will oversee and coordinate the activities of the three operating companies, while their other operating areas will continue to function independently. The top executive positions at each of the three companies will remain unchanged, according to Esquivel.

The companies and their subsidiaries will add AVO to their names for two reasons, Esquivel explained. "Biddle and Megger were owned by AVO International Ltd, the UK-based holding company acquired by TBG. Secondly, AVO is an acronym for Amperes, Volts, Ohms." The companies will now be known as AVO Multi-Amp Corp., AVO Biddle Instruments and AVO Megger Instruments Ltd.

"By bringing together the internationally recognized names of Multi-Amp, Biddle and Megger with the acronym 'AVO', we acknowledge the common electrical heritage and contributions all members of the new group have made, and will continue to make, to the electrical industry," Esquivel stated.

TBG Industries President Jack E. Haegele will be chairman of AVO International Inc.

NRC increases fees, imposes some new fees

The Nuclear Regulatory Commission announced that it is changing its licensing, inspection and annual fee schedules, in order to meet the requirements of the Omnibus Budget Reconciliation Act of 1990. Under the Act, the NRC must collect a total of $445.3 million through fees by Sept. 30, 1991. The $445.3 million represents the NRC total budget, $465 million, less the $19.7 million appropriated from the Department of Energy's Nuclear Waste Fund. The NRC said it is increasing the amount of annual fees assessed for operating power reactors from $1 million to $2.8 million.

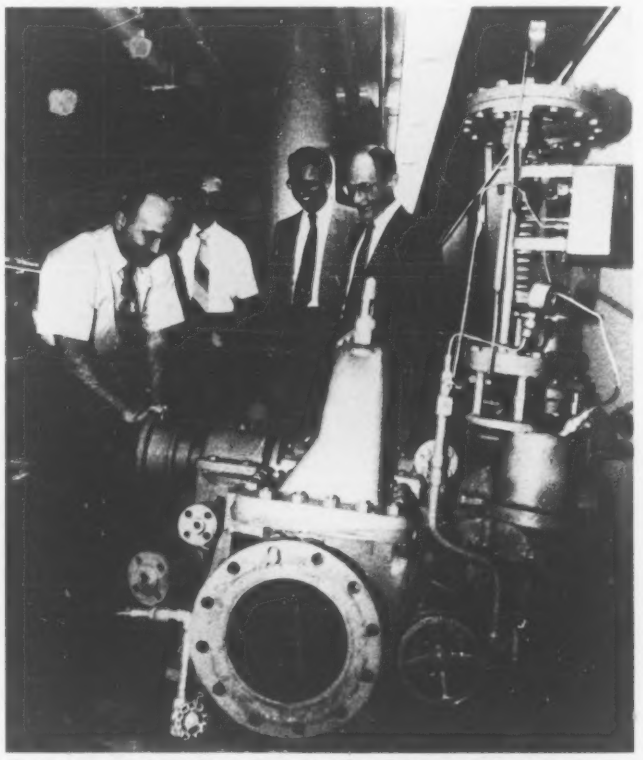
In addition, first-time annual fees will be assessed for fuel fabrication facilities, independent spent fuel storage facilities, uranium mills, transportation quality assurance approval holders and hospitals, doctors, irradiators, nuclear gauge users, and other nuclear materials licensees. Holders of registrations for sealed capsules and devices, and NRC-licensed federal agencies will also be assessed an annual fee.

In part, other revisions include: raising the cost per professional-staff hour for all full-cost fees; and increasing all flat fees for material licensees and applicants by 25 percent.

Ohio Edison donates turbine to U. of Akron

Mechanical engineering students at The University of Akron (UA) will have an actual boiler feedwater pump turbine to learn from, thanks to a donation from Ohio Edison.

The turbine, which had been used at Ohio Edison's Burger plant in Shadyside, OH, was delivered to the university's College of Engineering in June, and may be used as an instructional tool as early as this fall, according to Minel J. Braun, professor of mechanical engineering at UA. "A turbine of this type is excellent for instruction because it is easier to teach students the basics on these models," Braun explained. The turbine will be used to teach thermodynamics, fluid mechanics, turbomachinery theory, and tribology, as well as for advanced research in bearing seal technology, according to UA.



Checking out the boiler feedwater turbine Ohio Edison recently donated to The University of Akron's College of Engineering are (left to right): Minel J. Braun, professor of mechanical engineering; Benjamin T.F. Chung, head of the mechanical engineering department; Nicholas Sylvester, dean of the College of Engineering; and Douglas W. Tschappat, Ohio Edison executive vice president.

Consortium dedicates supercomputing lab for global climate modeling

The first U.S. supercomputing laboratory devoted solely to modeling climate changes due to greenhouse gases has been dedicated by the Model Evaluation Consortium for Climate Assessment (MECCA). MECCA, a partnership of industry, government and academic groups from the U.S., Japan, Italy and France, performed the dedication at the National Center for Atmospheric Research in Boulder, CO.

Numerical experiments, funded through MECCA, will evaluate the reliability of current global climate simulation models by focusing on human activities and natural events such as the emissions of greenhouse gases, changing land use, deforestation or volcanic eruptions.

"Gauging the reliability of climate models will be key to both policymakers deliberating now on the risks of global climate change and to scientists of developing improved climate models in the future," explained George Hidy, vice president of the Electric Power Research Institute's environment division.

Members of MECCA have already committed a total of $12.5 million to fund the first 15 months of research. Additional sponsors are being sought so that research may continue through the full 36 months. The consortium said it expects to have results available for the June 1992 United Nations Conference on Environment and Development.

The consortium members include: EPRI and the University Corporation for Atmospheric Research (U.S.); the Central Research Institute of Electric Power Industry (Japan); the Italian Commission for Nuclear Energy and Alternative Energy Sources; and the Electricité de France.

Zimmer saves CG&E customers $1.7M

During its first full month of operation, the Wm. H. Zimmer Generating Station saved Cincinnati Gas & Electric Co. electric customers $1.7 million, according to the utility. CG&E also projected that after one year, Zimmer will produce approximately $21 million in savings. The savings will be passed on to customers through the electric fuel clause portion of its electric rates. CG&E said the savings will begin to effect customers' bills in Jan. 1992.

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Personnel briefs

Bonneville Power Administrator James J. Jura was named general manager of **Associated Electric Cooperative Inc.** At press time, BPA had not yet named a successor for Jura.

Roger W. Kober, president and chief operating officer of **Rochester Gas and Electric Corp.**, has taken on the additional position of chief executive officer. Kober succeeds Harry G. Saddock who has relinquished his position due to health concerns. Saddock will continue to serve as chairman of the board until he retires on Dec. 31, 1991.

Iowa Southern Utilities Co. appointed René Males president. Males has served as chief operating officer of the company since March 1991.

Willard R. Holland was named president and chief operating officer of **Ohio Edison Co.** Holland succeeds Justin T. Rogers Jr. who was elected chairman and chief executive officer.

Missouri Valley Electric Association has chosen Larry D. Root as its president. Root is president and chief operating officer of **Iowa Electric Light & Power Co.**

H.Kerner Smith was elected president of the **American Boiler Manufacturers Association**. Smith is president and CEO of Riley Consolidated and Riley Stoker Corp.

Heat wave helps sales; substation proposal, new supply

Utilities from the Midwest through the East set records in July as a record-breaking heat wave and high humidity sent meters spinning, while other utilities reported other capacity and reliability news.

For the record books

Commonwealth Edison Co. and Ohio Edison were among utilities setting records.

Ohio Edison Co. estimated a record 5465 MW demand on 5 p.m. on July 22, passing the Aug. 28, 1990, peak of 5394 MW. The company said '91 is the sixth consecutive year for a new peak.

Commonwealth Edison Co. broke an Aug. 17, 1988, record of 17 459 MW with a July 22 peak of 17,733 MW. In other news, the CECo continued franchise talks with Chicago in August, after stalled negotiations in early summer. Chicago's franchise with the Northern Illinois utility expires at year's end. Chicago said it may municipalize.

New England Power Pool (NEPOOL) reported a new peak for utilities within its six-state region, 19,745 MW, on July 19. Continued heat contributed to use of 19,553 MW on July 23.

That new peak exceeded the previous record of 19,722 MW on Jan. 4, 1989, and the summer peak of 19,641 MW on July 27, 1989.

General Public Utilities Corp.'s Metropolitan Edison Co. broke records July 18, 19, 22, and 23 ending with 1978 MW. That far exceeds the previous 1852-MW Dec. 21, 1989, record. Power purchases and non-utility generation helped meet demand, Met-Ed said, especially with an unexpected 32-hour outage at one Titus coal-fired unit that ended July 21.

Dayton Power & Light Co. reported a peak of 2727 MW at 4 p.m. on July 22, surpassing the Sept.6, 1990, record of 2644 MW.

American Electric Power Co. Inc.'s winter-peaking Appalachian Power Co. reported new summer peaks of 5042 MW on July 22, and 5092 MW on July 23. Those exceeded the Aug. 18, 1988, summer peak of 4993 MW. The winter peak is 5996 MW on Dec. 22, 1989. The seven-state, eight-utility AEP system also set a summer peak record, 17,556 MW, on July 22.

Puget Sound utilities' substation

Bonneville Power Administration and four Puget Sound utilities proposed a $40-million substation north of Ellensburg, WA, as a step to help prevent winter-peak blackouts in the area. No new major transmission facilities have been built for the area since 1977, BPA said.

The utilities are Seattle City Light, Puget Sound Power & Light, Tacoma Public Utilities and Snohomish County Public Utility District.

BPA plans to issue a draft environmental impact statement for public preview Oct. 1. A final decision is scheduled for spring '92.

Winter peak demand in the Puget Sound area has grown by about 200 MW per year over the past 10 years, and 400 MW over the past two years. The surge, from an regional economic boost, is expected to settle down to match the long-term forecast of 200 MW per year, BPA reported.

Adding equipment at current substations should take care of the problem through 1993, said a BPA area manager. Other alternatives would cost $210-630 million.

If demand growth exceeds 1.5 percent, a new $230-million, 500-kV transmission line across the Cascades, and 420 MW of combustion turbines for $210 million could be added. Those decisions won't come until 1996, according to BPA.

BPA Competitive Bidding Generation Proposals

No.	Source	MW
5	Combustion Turbines	858
15	Combined-Cycle Combustion Turbines	2546
4	Wind	69
5	Hydro	235
5	Geothermal	105
1	Biomass	9
2	Coal	119
23	Cogeneration	1248
2	Utility System Sales	20

Generation Total 5209 MW

Bonneville flooded with proposals

In separate news, BPA received more than 103 projects totalling 5300 MW when the solicitation period ended for its new competitive bidding program on June 18. Forty-one conservation projects totalled 116 MW; 62 generating projects totalled 5200 MW. (See table.) No specific information about bidders or projects will be released until December, when of list of finalists will be announced. BPA seeks 300 MW of supply or savings by Dec. 31, 1997.

RFP in California

The Northern California Power Agency wants electric supply and/or demand-side management resources totaling more than 200 MW for 1995-2000. Requests for proposals are due by Nov. 12. NCPA is a Joint Power Agency based in Roseville, CA, and includes 11 municipal utilities, a rural electric cooperative, an irrigation district, and a public utility district with combined load of 1500 MW.

How expensive will SO_2 allowances be?

Long Island Lighting Co. expected to announce by Aug. 24 results relating to 50,000 sulfur-dioxide emissions allowances (1995-99) it put on the market this spring.

As of Aug. 13, LILCo officially would say only that "several" bids were received, declining to release more information, especially on price. One company source said more than 10 bids were received, but that could not be confirmed. May 29 was the bid deadline.

An allowance allows emission of 1 ton SO_2 per year.

Many utility planners expect allowance prices to be about $650 each in 1995, rising to $750 in 2000, said AER*X Inc. That company's new "Air Credit Trader," a Washington, DC-based newsletter, said actual market prices could be lower.

The "Compliance Strategies Review," by Fieldston Publications in Washington, DC, says utilities' median best estimate per allowance was $500 in 1995 and $700 in 2000, in 1991 dollars per ton, for a single 10,000-allowance transaction. The information was in the June 7 "CSR Emission Allowance Trading Index."

Amount of planned capacity increases

PRINCETON, NJ—U.S. utilities plan to add 89,300 MW of new generating capacity (utility and non-utility) between Jan. 1, 1991, and Dec. 31, 2000, and retire 4100 MW of existing capacity, says the North American Electric Reliability Council. Utilities in Canada project additions of 23,000 MW and retirements of 500 MW.

These figures, from the "Electricity Supply & Demand 1991-2000," have grown when compared to previously reported estimates.

Total planned capacity additions increased over those planned during the 10-yr period starting in 1988.

In 1988, NERC figures listed total additions from 1988-97 at 73.4 GW for NERC U.S. and 16.4 GW for NERC Canada.

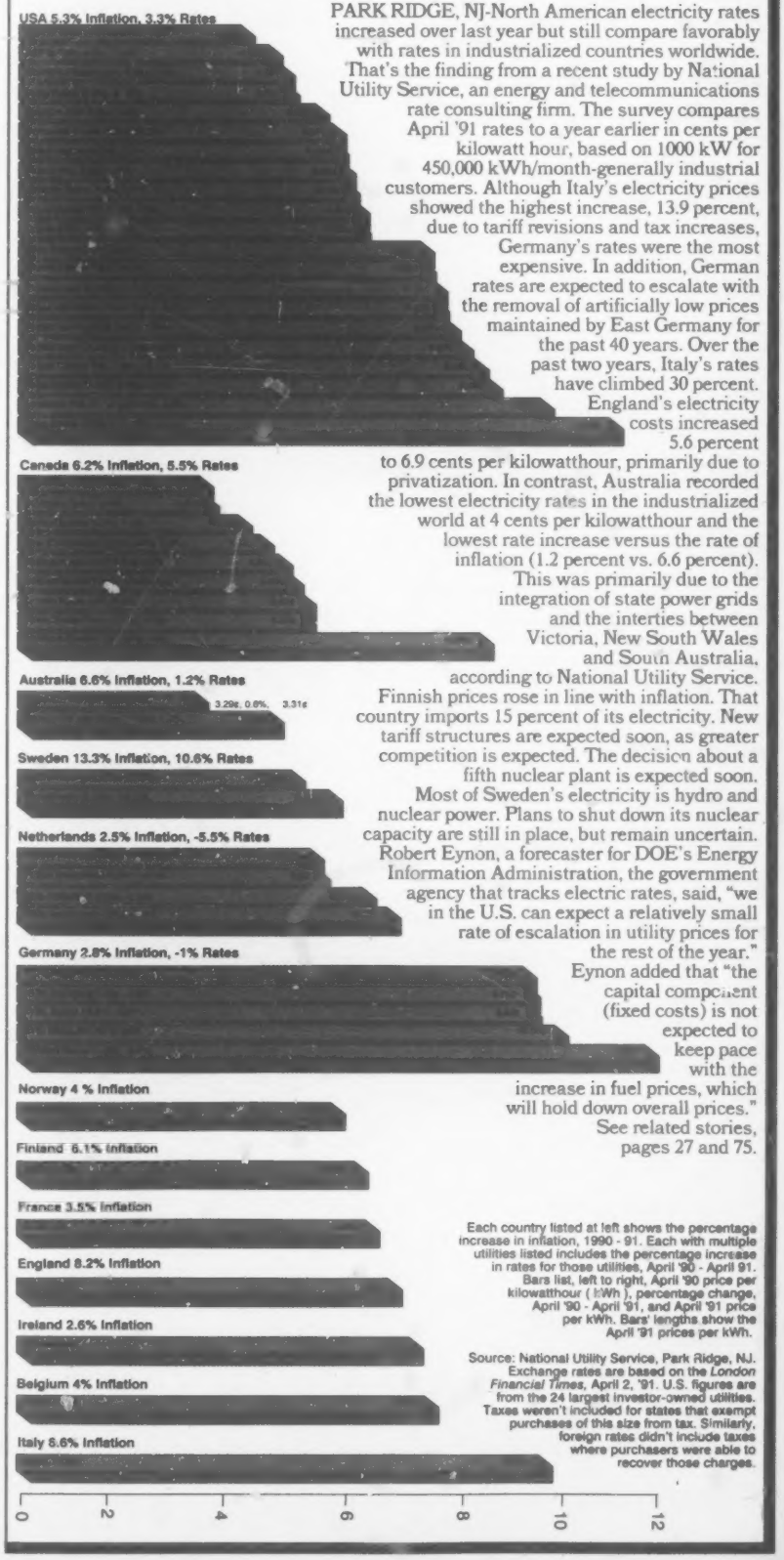
In 1991, NERC figures listed total additions from 1991-2000 at 89.3 GW for NERC U.S. and 23 GW for NERC Canada. Despite the increase in planned capacity, the amount of capacity under construction has decreased.

See tables p.4 and p.44.

The NERC report covers electricity demand, generating capacity, annual production, fossil fuel requirements, generating unit additions and retirements, transmission lines by the nine NERC regions and various subregions. It is the more detailed report upon which NERC bases its "Reliability Assessment 1991-2000."

The latest NERC report, an annual summary of electric utility supply and demand projections, may be obtained in print or on computer disk from NERC, 101 College Road East, Princeton, NJ 08540-6601; 609/452-8060.

North American industrial rates compare favorably with other countries



PARK RIDGE, NJ-North American electricity rates increased over last year but still compare favorably with rates in industrialized countries worldwide. That's the finding from a recent study by National Utility Service, an energy and telecommunications rate consulting firm. The survey compares April '91 rates to a year earlier in cents per kilowatt hour, based on 1000 kW for 450,000 kWh/month-generally industrial customers. Although Italy's electricity prices showed the highest increase, 13.9 percent, due to tariff revisions and tax increases, Germany's rates were the most expensive. In addition, German rates are expected to escalate with the removal of artificially low prices maintained by East Germany for the past 40 years. Over the past two years, Italy's rates have climbed 30 percent. England's electricity costs increased 5.6 percent to 6.9 cents per kilowatthour, primarily due to privatization. In contrast, Australia recorded the lowest electricity rates in the industrialized world at 4 cents per kilowatthour and the lowest rate increase versus the rate of inflation (1.2 percent vs. 6.6 percent). This was primarily due to the integration of state power grids and the interties between Victoria, New South Wales and South Australia, according to National Utility Service. Finnish prices rose in line with inflation. That country imports 15 percent of its electricity. New tariff structures are expected soon, as greater competition is expected. The decision about a fifth nuclear plant is expected soon. Most of Sweden's electricity is hydro and nuclear power. Plans to shut down its nuclear capacity are still in place, but remain uncertain. Robert Eynon, a forecaster for DOE's Energy Information Administration, the government agency that tracks electric rates, said, "we in the U.S. can expect a relatively small rate of escalation in utility prices for the rest of the year." Eynon added that "the capital component (fixed costs) is not expected to keep pace with the increase in fuel prices, which will hold down overall prices."

See related stories, pages 27 and 75.

Each country listed at left shows the percentage increase in inflation, 1990 - 91. Each with multiple utilities listed includes the percentage increase in rates for those utilities, April '90 - April 91. Bars list, left to right, April '90 price per kilowatthour (kWh), percentage change, April '90 - April '91, and April '91 price per kWh. Bars' lengths show the April '91 prices per kWh.

Source: National Utility Service, Park Ridge, NJ. Exchange rates are based on the *London Financial Times*, April 2, '91. U.S. figures are from the 24 largest investor-owned utilities. Taxes weren't included for states that exempt purchases of this size from tax. Similarly, foreign rates didn't include taxes where purchasers were able to recover those charges.

COMMENTARY

From devastation to non-event: eight miles

The white caps fling foam before the wind in their wild race down the lake. Sheets of rain pound the window glass, turning the mountain view to a gray-green haze. Hurricane Bob is almost here.

This commentary, written in a remote cabin in the Maine woods, is punctuated with intermittent commas of darkness as the lights blink out, then burn again. This is an area where Jane and John Doe maintain their love-hate relationship with the electric company that serves them. These days the mood matches the weather—dark and stormy. At the barbershop in the nearest town I was given the full litany of Central Maine Power's sins...focused largely on "yet another rate hike." Long-time friends and residents complain of high bills and still increasing rates. That's what CMP means to many, many folks, in these parts.

But as the afternooon wore on, two miles across the water I could see lights in vacation cottages blink on as cabin-bound vacationers played games with their kids, read and watched television. Elsewhere, in the homes of year-round residents, men and women, returned from businesses closed because of the hurricane's approach, also turned to inside activities, their lawn furniture stowed, windows and screen doors latched, and outdoor toys tucked safely inside. As much as 8 inches of rain and winds—predicted to hit 75 miles per hour even on the fringes of the hurricane—are not taken lightly here. Many remember earlier blows that laid half-mile-wide swaths of 90-foot trees on the ground, lined up like so many giant toothpicks arranged in a game, and flooded businesses and homes in coastal areas.

At CMP, work crews are alerted and marshalled throughout its service area, ready to respond wherever and whenever Bob hits. The governor has just issued an emergency executive order to all residents within a quarter-of-a-mile of the ocean to leave their homes and move inland. High tide and Hurricane Bob's arrival are expected to coincide. That means the probability of extensive coastal flooding and heavy damage to homes and businesses near the shore—a worst possible scenario.

Our tiny cabin is served by a single fragile line that seemingly runs for miles from the distribution substation. As elsewhere throughout the area, we are warmed, entertained and informed through that line. And similarly are hundreds of thousands of CMP customers in the area flying before the storm.

What happens if the lights go out and stay out? How will people react? I can't help but think about the people in South Carolina when Hurricane Hugo devastated a large portion of South Carolina Electric & Gas Co.'s territory, or residents in the San Francisco Bay area were hit by the earthquake. When disaster struck there, nobody blamed the utility. Instead, work crews received accolades and hurrahs from customers. Deeds of heroism, simple dedication and personal kindnesses were saluted. Complaints about rates? "Who cares about rates? These people are getting the power back on. They're restoring our lives," customers said. The utility—with help from others—gave its all in resources and effort to restore service and help customers...and their customers knew it. Ask the folks in the SCE&G area or in Pacific Gas & Electric Co.'s territories affected by the two disasters, and you'll find few real gripes. But here the lights blink off, on, off and on again. They dim for a third time, but then brighten. The winds and rain increase. A good night to be inside. But elsewhere, we hear over the radio, people only a dozen miles away aren't so fortunate. Pleasure boats have been thrown on the shores of Lake Sebago like so many cords of firewood. It's reported that as many as 120,000 CMP customers may be without power, some for several days. One eyewitness said the area looked like a war zone. Crews in raingear are already hard at work, beginning the arduous task of restoring electric service even while the winds and rain continued, and trees were tumbled before the blast. Perhaps in areas heaviest hit by the hurricane, the CMP rate hike will be forgotten as customers witness massive restoration efforts. As elsewhere, earlier customers will laud the utility's dedication and its round-the-clock efforts.

But in our little corner of the world, where the lights still burn, people will wake to just another day. CMP's rate hike will continue to be a prime source of local aggravation. But until the lights go back on throughout CMP's territory, perhaps the rate issues will remain a secondary interest.

Robert A. Lincicome, Editor-in-Chief, from Hancock Pond, ME

EL&P ELECTRIC LIGHT & POWER
1250 S. Grove Ave., Barrington, IL 60010

Arthur L. Rice, Publisher
Robert A. Lincicome Editor-in-Chief

PennWell PUBLISHING COMPANY
708-382-2450
Fax: 708-382-2977

Henry Stein, Senior Editor-Generation
H. Wayne Beaty, Senior Editor-Transmission/Distribution
Mark T. Hoske, News Editor
Jill F. Minner, Special Projects Editor
Dianne Wilson, Editorial Assistant-Products/Literature
B. J. Davidson, Bulletin Board Coordinator
William Kenworthy, Legal/Regulatory Editor
Ted Pollock, Management Editor
Richard D. Alaniz, Labor/Management Editor
Anthony F. Cantarella, Safety/Training Editor
John D. Turrel, Contributing Editor

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LETTERS

Fossil-Fuels Focus Report

The otherwise superb May Article, "Focus—Fossil Fuels" (pp.25-30), contained an oversight that I would like to correct. Regarding dry, low-NOx combustors, you state correctly that they operate without heat-rate penalty and added maintenance due to water or steam injection, and without the high capital investment and potential operating problems of SCRs.

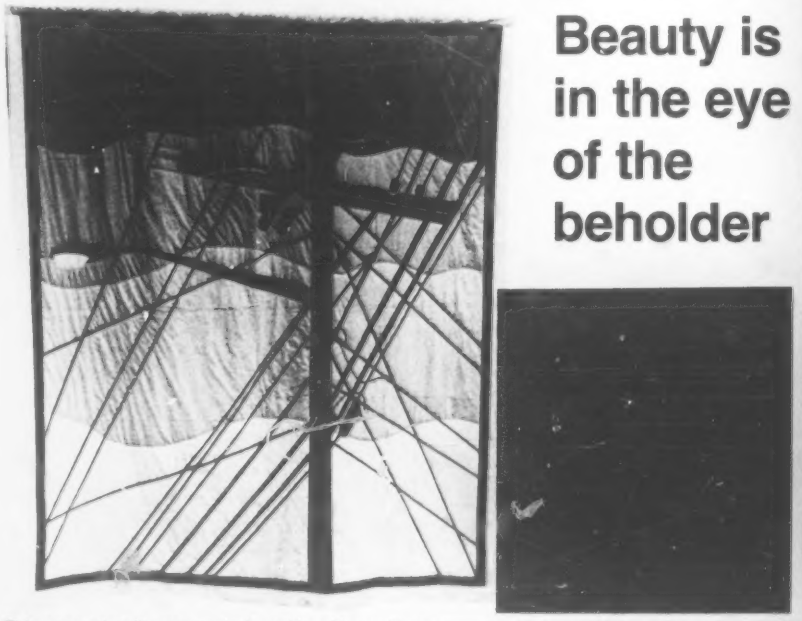
However, you go on to say that dry, low-NOx combustors "...are still under development, and those in the field do not have the track record of water and steam injection."

Apparently you are unaware that since 1986 Siemens has installed dry combustors in over 30 units, now with more than 150,000 service hours. This obviously is a "track record" of which we are quite proud.

Jim R. Thompson
Deputy General Manager
Combustion Turbine Group
Siemens Power Corp.

Editor's note—We stand corrected. While we stick with our statement that many low-NOx combustors still are under development, we may have overstressed their developmental status. We appreciate the update.

Beauty is in the eye of the beholder



This unusual quilt was made by a New Hampshire woman for Malcolm Wells, a Cape Cod (MA) architect, who wanted to commemorate the existence of poles and wires, which he says will someday be things of the past. Wells converted a photo (r) into the design for the quilt. On display at Wells' Underground Gallery in Brewster, MA, the 82"x96" quilt is for sale.

Construction Status of Generating Unit Additions (Thousands of MW) Projections 1991 - 2000

See story p. 3

	United States	Canada
Coal	15.1	1.9
Not Yet Under Construction[b]	9.0	0.4
Under Construction	6.1	1.5
Nuclear	5.9	2.6
Not Yet Under Construction[b]	0.0	0.0
Under Construction	5.9	2.6
Hydro	1.1	12.7
Not Yet Under Construction[b]	0.8	7.3
Under Construction	0.3	5.4
Oil/Gas	34.2	2.3
Not Yet Under Construction[b]	33.0	1.9
Under Construction	1.2	0.4
Pumped Storage	2.5	0.0
Not Yet Under Construction[b]	0.2	0.0
Under Construction	2.3	0.0
Other (Utility)[c]	12.8	1.1
Not Yet Under Construction[b]	12.7	1.1
Under Construction	0.1	0.0
Total (Utility)	71.6	20.6
Not Yet Under Construction[b]	55.7	10.7
Under Construction	15.9	9.9
Non-Utility Generators	17.7	2.4
Total (All Additions)	89.3	23.0
Retirements	4.1	0.5

[a] Perry 2, WNP 1, and WNP 3 are in some stage of construction but are not included.
[b] Includes utility units planned but utility authorized, units with regulatory approval pending, and units with regulatory approval received but not yet under construction.
[c] Includes utility capacity powered by geothermal, wind, solar, wood, refuse, and similar energy sources and capacity of unspecified fuel type.

Source: North American Electric Reliability Council, July 1991, " Electricity Supply & Demand 1991 - 2000 "

CMS energy will not contest $1.5-B order

DEARBORN, MI—CMS Energy Corp. agreed to return $1.5-billion debt and equity interest in Midland Cogeneration Venture (MCV) to utility subsidiary Consumers Power Co.

CMS Energy said it would not appeal a recent Michigan Court of Appeals decision to affirm a May 23, 1990, Michigan Public Service Commission order requiring return of the debt and equity.

CMS Energy said it would return $1.2 billion of marketable bonds and about $300 million of equity interest to Consumers Power and extinguish the CMS debenture held by Consumers Power which was received for the MCV interests.

Consumers Power Co. will use the funds to reduce debt and increase investment to improve customer service.

Corrections

SAN DIEGO—San Diego Gas & Electric purchased one transformer from Smit, a Dutch firm, for the Peñasquitos substation project (*EL&P*,p.3,6/91). One 230-69-kV transformer has been added. Two 230-138-kV transformers will be added, but haven't been purchased. SDG&E is rearranging the existing 69-kV yard as part of that project.

SDG&E has 1.1-million customers. Southern California Edison has about 4-million customers (*EL&P*,p.1,6/91).

EL&P regrets the errors.

HENRY STEIN, Senior Editor-Generation

Three nuclear power units set industry output records in 1991

WASHINGTON—Within hours of each other, two nuclear power units were the first and second ones to reach total production of 100 GWh of electricity output. In the meantime, a third unit set a record for the longest uninterrupted operating run.

Duke Power Co.'s Oconee-1, near Clemson, SC, was the first to reach the production record, at 10:39 a.m. on July 28. Indiana Michigan Power Co.'s Donald C. Cook-1, near St. Joseph, MI, was the second at 1:50 p.m. on the same day.

Three Mile Island-1 set the record for the longest uninterrupted operating run on July 22, having operated for 478 consecutive days.

Vying for the record

"The Cook, Oconee and Three Mile Island plants stand among the top performers of the nuclear plants that came into service during the 1970s," said Phillip Bayne, president of the U.S. Council for Energy Awareness (USCEA). He added that the three units are examples of a wider industry trend. "They're proof positive that America's 111 nuclear plants aren't [just] getting older, they're getting better."

Oconee-1 entered service in 1973 and, along with two sister units, supplied 30 percent of the total electricity for Duke Power's customers in 1990. The three units operated at 90 percent of their maximum capacity last year.

Cook-1 began commercial operation in 1975. In 1990, it and its sister unit supplied over 11 percent of the total electricity needs for the 2.5-million customers of Indiana Michigan's parent American Electric Power Co. Inc.

Class by itself

TMI-1 entered service in 1974. It achieved its record run four weeks after being named by the Nuclear Regulatory Commission as one of the four safest nuclear units in the country. Its operating run was the longest of any U.S. commercial nuclear power unit and the longest continuous run of any light water reactor in the world, according to USCEA. General Public Utilities Corp.'s GPU Nuclear operates TMI-1. Most reactors are the light water type.

The record run began in March 1990, and the plant is not scheduled to shut down for routine refueling and maintenance until the end of September.

Unit 1's 478-day run surpasses the previous record of 477 days made in 1988 by Omaha Public Power District's Fort Calhoun Station, in Nebraska.

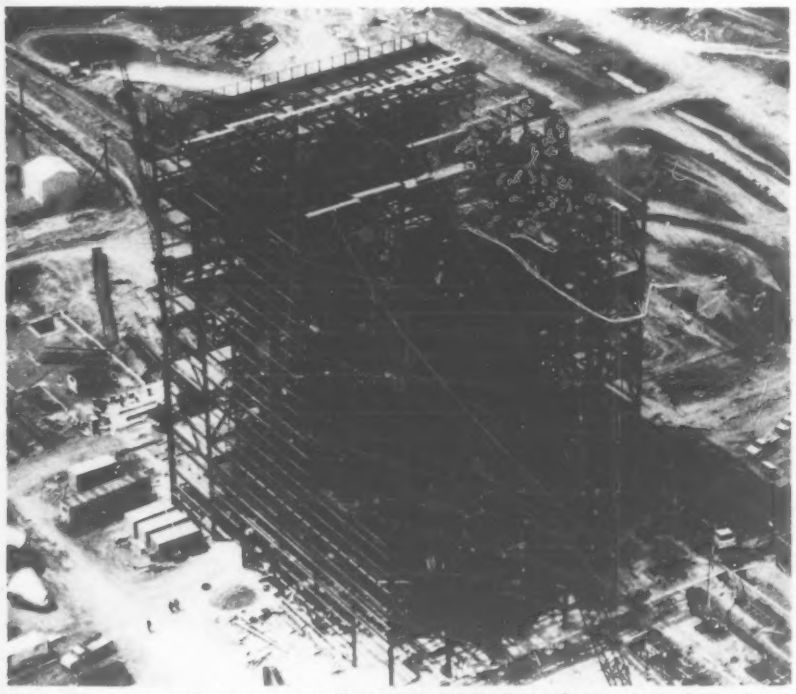
During its 16-month run, TMI-1 also earned the highest rating in each of seven inspection categories in a comprehensive NRC assessment, the Systematic Assessment of Licensee Performance, which is much better known by its initials, SALP.

New utility power plant being built in Nova Scotia

CHICAGO—The steam drum for the 165-MW Point Aconi power plant was raised into place on June 7, a week ahead of schedule. The plant is being built in Cape Breton County, Nova Scotia, for Nova Scotia Power Corp. with Mitsui & Co. (Canada) Ltd. as prime contractor and Sargent & Lundy as project manager and architect/engineer.

Chicago-based Sargent & Lundy says this single-boiler plant is one of the world's largest circulating fluidized-bed (CFB) boilers.

It will burn local Cape Breton high-sulfur coal (3-5 percent sulfur) and remove 90 percent of the SO_2 emissions. In addition, it says the CFB will have inherent NOx control. The first unit is scheduled for operation in 1993. Additional units may be added later.



It's up, up and away as the steam drum is lifted into the steel skeleton of a new power plant undergoing construction in Cape Breton County, Nova Scotia.

NUGs doing well, future in doubt

NEW YORK—Non-utility electric generating (NUG) capacity from cogenerators and small power producers reached 38 GW at the end of 1990. Estimates suggest another 22 GW may be added by 1995.

Frost & Sullivan International, the market research firm, reached these conclusions after performing a study that focused on large cogeneration systems of 500 kW to over 100 MW.

More and bigger

The study found a rapidly growing trend toward larger-size gas turbines for cogeneration—average turbine size in these applications increased from 24 MW in 1988 to 34 MW in 1990.

However, the firm's analysis of large-size cogeneration systems also concluded that growth in the number of annual additions will peak in the next few years and then decline in the long term.

In fact, the report on the study maintains that after the year 2000, technological improvements will help make nuclear power a viable option once more. In addition, utilities will again begin ordering and building low-unit-cost central stations to the point where they will become the dominant factor in capacity additions.

Deja vu all over again

This turn of events will show history repeating itself. In 1900, about 60 percent of U.S. electric generating capacity was self-generated. But by 1940 less than 35 percent was user-generated, and this amount declined to less than 10 percent by the 1970s.

Congress passed the Public Utility Regulatory Policies Act (PURPA) in

Continued on page 30

SCE&G announces plans for new baseload coal plant

COLUMBIA, SC—South Carolina Electric & Gas Co. announced late in June that it will build a new coal-fired, baseload plant near the town of Cope, SC, about 25 miles south of Columbia.

The 385-MW facility will become the sixth coal-based baseload plant on SCE&G's system and the company's first major construction project since its V.C. Sumner Nuclear Station was begun in 1974.

Equipment and systems

The plant will consist of a single pulverized-coal boiler, dry scrubber and turbine-generator located on a 3000-acre plot, one that will allow for future expansion.

The boiler will be able to burn 148 tons of coal per hour when operating at 100-percent capacity. The coal will be delivered by CSX Railroad on trackage adjacent to the site.

The plant's dry scrubber will hold SO_2 emissions to 0.34 lb/MBtu or 90-percent removal, whichever is more stringent.

Flyash and the lime byproduct from the scrubber will be removed from the exhaust gases in fiberglass baghouses, then loaded into dump trucks and hauled to an onsite disposal area designed to meet current environmental standards.

The brick-lined concrete chimney will

Continued on page 38

Today's baghouses are better, more dependable

PALO ALTO, CA—Current utility baghouses have longer lives and operate better those in the past.

Bag life increased significantly since the first installations in the 1970s. Guaranteed bag life of three years has become typical for new installations, and average bag failure rates have stabilized to approximately 1 percent of installed bag capacity.

Operation, maintenance

Operation and maintanance no longer are problems, according to utilities answering a survey and site visits conducted by the Electric Power Research Institute in 1989 and reported recently. Maintenance problems appear to be independent of boiler type, fuel type, startup method and startup fuel.

In most cases, baghouse problems do not reduce boiler availability. They are being corrected in-service or during scheduled outages.

Operating parameters

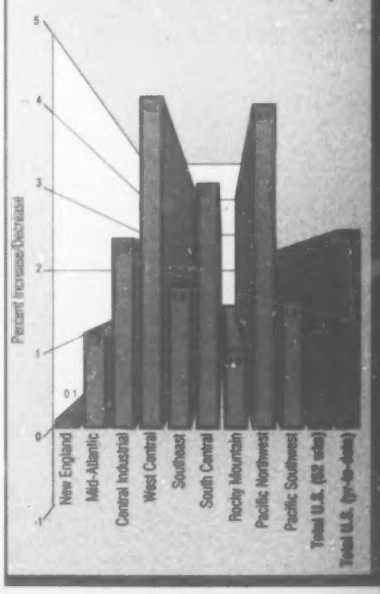
Other findings are that current baghouses operate at a gross air-to-cloth ratio of 1.5-2.0 fpm for reverse-gas and 2.5-3.0 fpm for shake-deflate cleaning. Many reverse-gas-cleaned baghouses

Continued on page 31

ELECTRIC OUTPUT

Some Growth Slowed

Net electric output from the Mainland U.S. electric utility industry increased for the 52 weeks ending July 26, as reported by Edison Electric Institute. New England's growth rate fell from 0.6 percent for the 52 weeks ending June 29.



Recent EPA activities affect utilities; clean-air regs, climate

WASHINGTON—Various Environmental Protection Agency (EPA) actions on clean-air regulations, handling hazardous wastes and global-climate concerns are among those impacting utilities recently.

Acid rain reduction

EPA has released for public comment, the draft document necessary for carrying out the Phase II acid rain reduction program under the Clean Air Act Amendments of 1990.

The agency also prepared a computerized database designed to help utilities and other affected.

Phase II, which begins in 2000, will fulfill President Bush's goal of cutting SO_2 emissions in half.

As previously reported, it will also permanently cap annual SO_2 emissions at 8.9-million tons nationwide. Halving SO_2 emissions under the new Act represents a 10-million-ton reduction from 1980 levels.

The cut will be accomplished in two phases: Phase I, beginning in 1995, for the largest power plants; Phase II, beginning in 2000, for smaller plants. The acid-rain program includes a market-based trading system of SO_2 allowances, which gives affected sources (mainly exisiting power plants) the right to emit one ton of SO_2.

If a source does not use up its allowances, it can sell the remaining emission rights to another utility or bank them for future use. Allowances are based on emission rates, previous level of coal, oil or other fuel use.

In the new Act, Congress specifically named 110 plants as subject to Phase I requirements. EPA will determine facilities affected by Phase II and their allowance allocations.

The National Allowance Database (version 2.0) contains a variety of information by state and by utility on such things as total generating capacity and total amount of SO_2 emitted into the atmosphere annually.

EPA has established a hotline—703/218-2716—for obtaining information about the database and technical support documents.

The EPA database for calculating SO_2 allowances was published July 19 in the Federal Register. Utilities have 45 days to review the information for accuracy, noted the American Public Power Association, in its *Public Power Weekly* newsletter.

Innovative technologies

EPA will develop a new database—The Vendor Information System for Innovative Treatment Technolgies (VISITT)—to make information about innovative technologies regarding hazardous waste cleanup more widely available. The database will be available in early 1992.

EPA invites vendors to submit their capabilities for use in the database. Forms must be submitted by Sep[illegible], 1991, to be included in the first release of the database.

VISITT will include information on vendors that treat groundwater, soil, sludge, sediments and solid wastes. It will *not* include incineration, solidification/stabilization and traditional pump-and-treat for groundwater. The VISITT database will be updated at least annually.

Call 800/245-4505 for additional information. Forms for vendors can be obtained from EPA's Office of Research and Development, Publications, at 513/569-7562.

Global warming

EPA's new report *Methane Emissions From Coal Mining* is the second in a series of reports on methane control options. Methane gas is expected to contribute 20 percent to future global warming. Coal mining will contribute an estimated 7 to 12 percent of atmospheric methane.

The report estimates methane emission from coal mining by country, evaluates control technologies available and assesses the economics of methane recovery during mining.

Top 100 correction

The heat rate for fossil-fueled boilers listed in Table 5 of the Top 100 operating report (*EL&P*, 8/91, p.20) for Florida Progress Corp. was recorded incorrectly. The actual rate in 1990 was 9821 Btu/kWh, which moves the company to the No. 4 place in the table.

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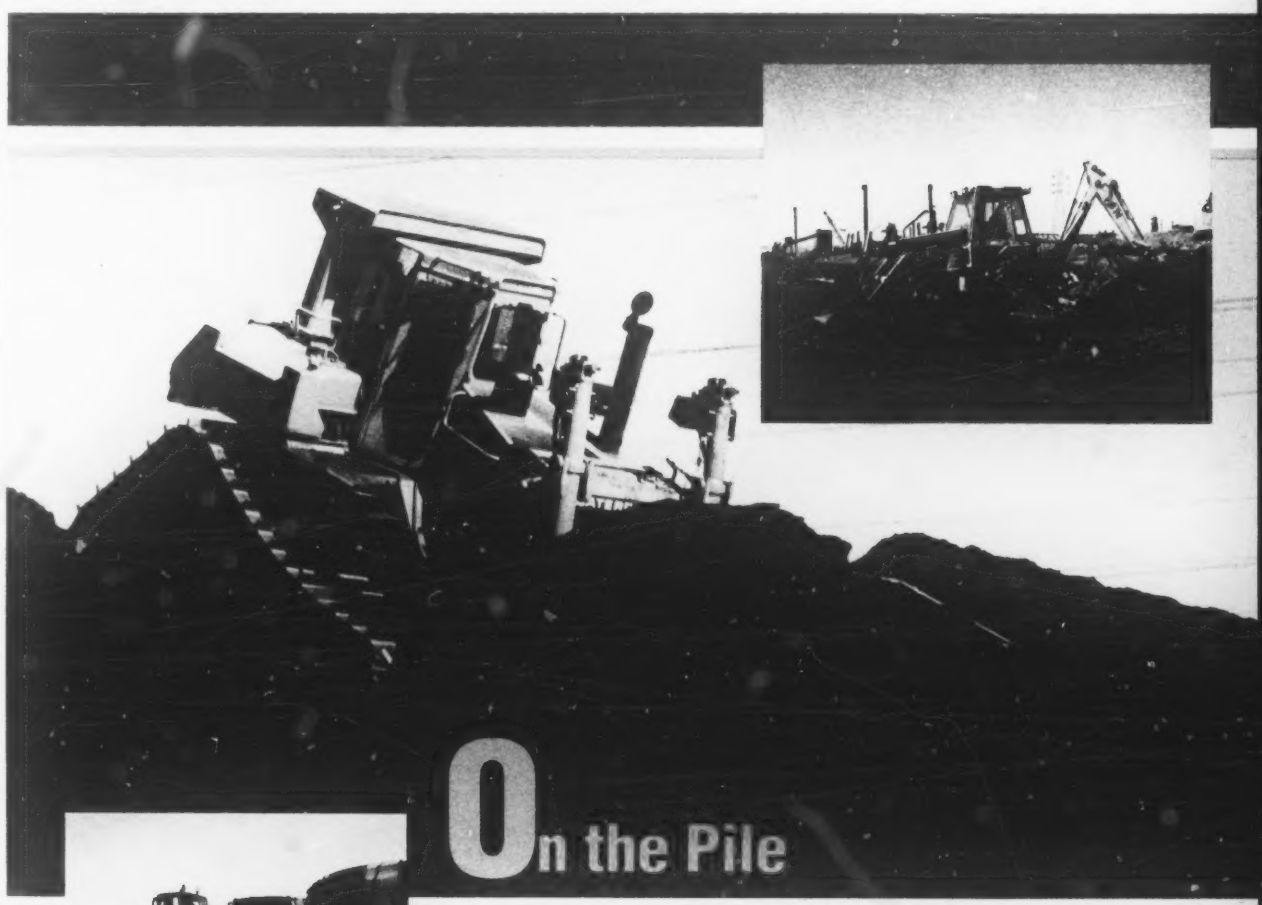
GT shipment...

tured in Westinghouse facilities in Charlotte, NC; Winston-Salem, NC; Fort Payne, AL; and Hamilton, Ontario, Canada.

The company said that cumulative operating data for domestic 501D5 combustion turbines, compiled since startup, show an average reliability of 99 percent and average availability of 95 percent.

The 501D5 features three distinctive design elements:

- *Cold end drive.* The generator drives from the compressor end of the turbine, instead of the hot exhaust end, thereby allowing thermal expansion to occur toward the rear of the unit. This eliminates the need for a flexible generator coupling and improves reliability and availability.
- *Axial exhaust.* Made possible through the cold-end design, this feature enhances efficiency by eliminating side-exhaust turning losses.
- *Two-bearing construction.* Simplifies maintenance and reduces the potential for problems that can occur with a center bearing located in the hot combustion area.



On the Pile
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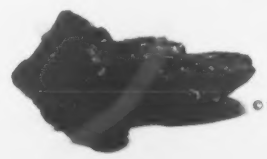

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Inquire R.S. 22

NERC regions plan to add new transmission lines

PRINCETON, NJ—U.S. electric utilities will add 12 600 circuit miles of transmission lines operating at voltages of 230 kV or higher in the next 10 years, according to the North American Electric Reliability Council's Electricity Supply & Demand 1991-2000 report.

Canadian utilities will add 8800 circuit miles to their existing 41,000 circuit miles. Current circuit miles (Dec. 31, 1990) in the U.S. for this voltage range are 147,000.

Some 287-kV and 360-kV lines are included in the 345-kV category for the Western Systems Coordinating Council. For Quebec, the 345-kV category represents 315-kV lines and the 765-kV category represents 735-kV lines.

Existing Circuit Miles:		
kVac	U.S.	Canada
230	70,511	22,207
345	47,948	5,265
500	23,958	5,353
765	2,428	6,257
kVdc		
250-400	465	47
400	436	0
450	192	1,934
500	1,333	0

Planned Additions 1991-1995:		
kVac	U.S.	Canada
230	3,182	1,407
345	1,906	689
500	1,729	766
765	0	768
kVdc		
450	0	1
Planned Additions 1996-2000:		
230	1,737	1,205
345	1,677	890
500	2,308	1,561
765	110	1,040

Long Island gets new power source

HEMPSTEAD, NY—The Long Island Sound Cable Project was officially inaugurated May 30 in ceremonies at which Governor Mario Cuomo threw the switch that energized cables bringing low-cost power from Canada and upstate New York to Long Island.

This New York Power Authority project was completed 18 months ahead of schedule. Pirelli Cable Corp., Florham Park, NJ, supplied and installed the 32 miles of double-armored cable. "This is the largest self-contained, fluid-filled cable ever used in the U.S.," said James McCourt, vice president of Pirelli Cable Systems Division.

The cable was manufactured in Italy and transported to New York by the specially equipped Pirelli cableship *Giulio Verne*. The 345-kV cable measures more than 15 cm in diam, with each foot weighing nearly 60 lb (90 kg/m), for a total weight of 60 tons.

Four cables were laid under the Sound from New Rochelle in Westchester County, NY, to Hempstead where a Long Island Lighting Co. substation will distribute the power to area customers. One of the cables will serve as a spare for the 670-MW capacity circuit.

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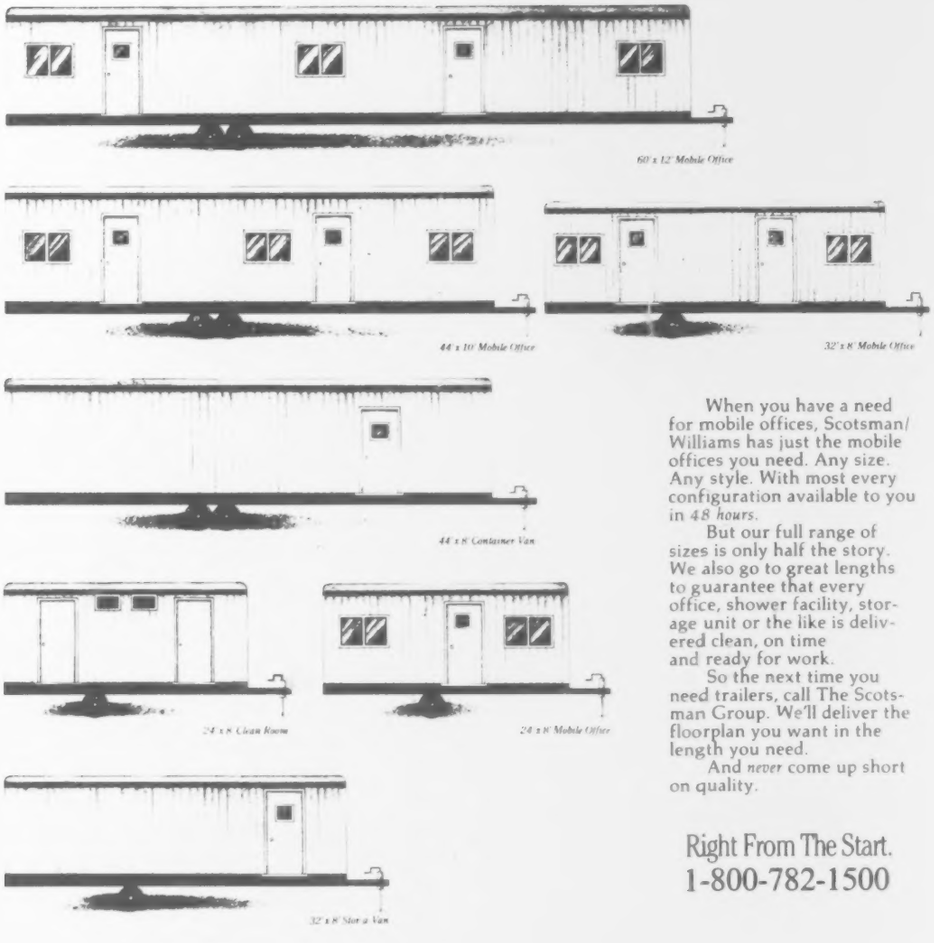
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DSM program...

grew out of a regulatory stipulation that a local area load forecast and an assessment of the potential load reductions from DSM accompany any filing for transmission line upgrades based on load growth.

The project began with forecasting and DSM assessment for its 14 transmission areas, regions defined by geographic and circuit similarity rather than by any reference to political or internal corporate designations.

CMP's first two local area load forecasting and DSM assessment efforts indicated limitation on the econometric approach to forecasting on the local level. AST's technique—a spatial load forecasting method—overcame many of these restrictions.

AST will produce a report for each of the 14 transmission areas and assess load reduction from each of 32 DSM technologies and a coordinated group of 15. The data will provide the first clue to the potential for demand-side load reduction on a regional level.

Complicated technology

ABB's AST group says that achieving significant savings with an integrated T&D DSM program requires an understanding and treatment of the complexities that exist between the characteristics of DSM and its impacts on the T&D system. Complicating elements of DSM and T&D include load coincidence changes, market penetration levels, and geographical distribution of customer classes. The techniques are considerably more complex and involved than at the generation level, according to ABB's Lawrence Vogt, Lee Willis, and Lynn Ribar.

The same DSM program can yield a large savings in one area, overshift load in another to the point of creating a higher local peak, and yet make no impact at all in a third area.

For this reason, DSM programs successfully aimed at T&D savings must be coordinated carefully with local needs thoughout the utility system.

Other utilities that are analyzing DSM from the total system perspective include Gulf Power Co., Newfoundland Power, Bonneville Power Administration and the City of Austin (TX) Electric Department.